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ABSTRACT

Scientists have no difficulty defining their disciplines by subject matter and methodology, but humanists, however much they agree on the subject matter of the humanities, have no consensus about methodology. In the twentieth century truce resulting from the assumption that there can be no coexistence between the two, scientists and humanists are content to be treated as separate but equal, while social scientists claim to be scientists when it suits their purpose. Humanists produce knowledge without benefit of laboratories, sometimes working like scientists, but their medium is the word, and analogies, striking examples, and logic are their nonscientific proofs. These are the rhetoricians, applying Aristotle's devices as a methodology for discovering proofs about questions that empirical sciences cannot handle: physics can explain how to build a nuclear reactor, but not whether the reactor should be built. The implications of the limits of science on composition research are that limiting study to only quantitative research or developing unrealistic expectations about what quantitative research can deliver would ignore the mainstream of insight in rhetorical theory from Aristotle's time to today. (HTH)

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RHETORIC: THE METHODOLOGY OF THE HUMANITIES

James C. Raymond

The Rockefeller Foundation's specially appointed Commission on the Humanities issued its report last year. In it you will find, among other insightful remarks, passages like this one, telling you what the humanities are and what they do:

> The essence of the humanities is a spirit or an attitude toward humanity. They show how the individual is autonomous and at the same time bound, in the ligatures of language and history, to humankind across time and throughout the world. The humanities are an important measure of the values and aspirations of any society. Intensity and breadth in the perception of life and power and richness in works of the imagination betoken a people alive as moral and aesthetic beings, citizens in the fullest sense. They base their education on sustaining principles of personal enrichment and civic responsibility. They are sensitive to beauty and aware of their cultural heritage. They can approach questions of value, no matter how complex, with intelligence and goodwill. They can use their scientific and technical achievements responsibly because they see the connections among science, technology, and humanity.[2]

This is stirring language, no doubt, and it expresses sentiments that everyone in this room will approve. But the report has been criticized for just this sort of achievement: for writing about the humanities in words that will make humanists feel good about being humanists, but that will fail to enlighten scientists, engineers, or politicians about how humanists operate. The report preaches to the converted; it fails to define the humanities as a discipline or as a collection of related disciplines in a way that practicioners of other disciplines can grasp.

Scientists have no problem in defining their disciplines. A discipline in general, they would say, must have a subject matter and a methodology. The methodology of science is hypothetico-indictive research, and there is a fairly general consensus about what that entails despite some quibbling over fine points.

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The subject of science varies with the name of the science. Physics is the application of hypothetico-inductive research to matter and energy. The various subdisciplines within physics--e.g., acoustics, optics, mechanics, thermodynamics, cryogenics, etcet.--consist of the application of the same methodology to corresponding subsets of the general categories matter and energy.

Humanists, of course, have little trouble agreeing on the subject matter of humanities, but there is no consensus about methodology. In general, the subject matter includes, as the Rockefeller Commission reminds us, languages, literatures, history, philosophy, the arts, the history and comparison of religion and law, linguistics, archeology, ethics, and even "those aspects of the social sciences which have humanistic content and employ humanistic methods."[2] But there's the rub. What are humanistic methods? The report does not say. Like other recent commentaries about the state of the humanities, it laments the fact that humanists seem unable to tell each other, much less other people, how they do what they do and how their methods relate to methods in other fields:

> The need to interrelate the humanities, social sciences, science, and technology has probably never been greater than today. . . . Whether because of frustration, misunderstanding, or indifference, however, collaboration among humanists, scientists, and technicians is insufficient. In universities and in public life, the impression persists that the humanities and sciences form two separate cultures, neither intelligible to the other.[3]

In modern times, the disjuncture between science and other modes of inquiry begins with Auguste Comte, the French mathematician and philosopher who is regarded as the father of positivism. According to Comte only the empirical disciplines were worthy of the name "science"; the others were dismissed as mere "speculation." Freud, too, contributed to the disjuncture, particularly in the last of his New Introductory Lectures on Psycho-Analysis, which is not only a eulogy of the scientific method, but a bitter attack on those forces that habitually or occasionally fail to limit themselves to inductive reasoning--

namely art, philosophy, and religion, the traditional terrain of humanism. "There is no other source of knowledge of the universe," Freud says, "but the intellectual manipulation of carefully verified observations, in fact, what is called research, and . . . no knowledge can be obtained from revelation, intuition, or inspiration."[4] As if he had anticipated the fragile truce I. A. Richards was to establish between poetic and scientific discourse, Freud goes on to declare that there is no possibility of coexistence:,

> It is inadmissable to declare that science is one field of human intellectual activity, and that religion and philosophy are others, at least as valuable . . . . The bare fact is that truth cannot be tolerant and cannot admit compromise or limitations, that scientific research looks on the whole field of human activity as its own, and must adopt an uncompromisingly critical attitude towards any other power that seeks to usurp any part of its province. (pp.874-875)

In the same lecture Freud inveighs against those who claim to have a truth "more comforting and more ennobling than anything you could ever get from science," truth "in a different and higher sense" (p. 880). The ordinary man will not fall for that sort of talk, Freud says. "The ordinary man knows only one truth--truth in the ordinary sense of the word . . . . Truth seems to him as little capable of having degrees as death" (p. 880).

Although Freud was attacking defenses of religion in this passage, he might just as well have been attacking any apology for humanistic studies, including the Rockefeller Commission's report, that merely posits and praises the validity of its methodology without taking the trouble to establish it systematically.

Nevertheless , an uneasy truce has prevailed between the sciences and the humanities during the twentieth century, not a truce based upon mutual understanding, but on the assumption, that no genuine mutuality is possible, an assumption reinforced by I.A. Richards's comfortable distinction between scientific and poetic discourse, by Ornstein's differentiation of the

functions of the brain's hemispheres, and more importantly by the realities of university politics and economics, with scientists and humanists content to be treated as separate but equal (though not really believing the "equal" part) while social scientists hover between the two, claiming to be scientists when science suits their purposes, but not always limiting themselves to generalizations that can be verified with the certitude of science.

In reality there is a clear and definite relationship among the various methodologies of academic inquiry, and the best way to discover it is simply to look across any university campus and determine how those who claim to be producing new knowledge go about producing it. Those who are producing scientific knowledge as Comte and Freud described it are easy enough to locate because they all have laboratories or collections of specimens used in empirical research. Among the non-scientists there are two groups: those who have constructed self-contained symbol systems (i. e., the logicians, the mathematicians, and the computer scientists) and those who haven't. Already a relationship is emerging. The empirical sciences use mathematics for proof, but the converse is not true. In other words, the method of science is to describe empirical data in mathematical and logical terms, but the method of mathematics and logic is, in the purest form, indifferent, even inimical to empirical application.

The third group on campus--those who are producing knowledge about language and literature, the arts, history, philosophy, comparative religion, and law, human and social behavior, without the benefit of laboratories or special symbol systems, sometimes work as if they were scientists--insisting on empirical evidence and statistical probability. But their habitual medium is the word, and they often use non-scientific proofs in their discussions: analogies that obviously limp, striking examples rather than random samples, speculations about chains of causality involving human motives that are inscrutable in any scientific sense or variables more numerous than actuaries can account for.

These are not the alchemists or the necromancers. They are the rhetoricians. They are applying the devices that Aristotle outlined in his Rhetoric as a methodology for discovering proofs about questions that neither dialectic nor empirical science can handle. Although Aristotle applied them primarily to political and legal issues and to public discourse, it is apparent that the "non-scientific" proofs he described in the Rhetoric are applied today in virtually every field not limited to a laboratory.

There is a fourth group, too: those who make things rather than knowledge. This group includes all those disciplines we consider applied, particularly engineering and the fine arts.

What emerges from this survey is not a hostile standoff between incompatible methodologies, but a set of nesting boxes, each larger than the other: the methodology of mathematics (which is deductive reason from assumed premises) is the smallest box; the methodology of the laboratory sciences is a larger box, including the principia mathematica, but also including empirical observation and inductive evidence; and rhetoric, the methodology of the humanities, is a still larger box, including the principia mathematica as well as observation and induction, but also including a kind of proof that science and mathematics cannot include--namely, the enthymeme, a line of reasoning that is merely probable. The methodology of the artists and engineers--the creators--may ultimately defy definition; but consciously or unconsciously, engineers employ physics and mathematics, and artists, draw upon every other field both for the medium and the matter of their works.

On another occasion I suggested that the classical lines of proof--e. g., analogy, dialectic, example--appear in a slightly different guise in each of these modes of inquiry. I also pointed out that the nesting boxes represent a hierarchy of certitude, the pinnacle of which is mathematics, as well as a hierarchy of reductiveness, the pinnacle of which is mathematics again. In other words, greater degrees of certitude are always achieved at the cost of reductiveness. Mathematics, as a number of philosophers have observed, may be the only sure form of knowledge, because it is a self-contained system, purely rational, unsullied by the uncertainties inherent in empirical observation. Empirical science is more useful but less certain--more useful because it describes physical rather than rational events, but less certain because its descriptions are always subject to revision imposed by new data, always limited by the inaccuracy of measurements. Rhetoric, applied to the humanities or to any other field, is even less certain than science, but also more useful, because it deals with questions that

science methodologically excludes: questions about values, ethics, esthetics, meaning, politics, justice, causality involving human motives, and causality involving an indeterminate number of variables. In short, physics can tell us how to build a nuclear reactor, but it cannot tell us whether we ought to build one, or whether, on balance, the costs will outweigh the benefits.

One effect of clarifying the methodology of the humanities is to define more clearly the limits of science. Freud, of course, like many scientists after him, believed that science had no limits. He imagined that science could eventually address any question ("scientific research looks on the whole field of human activity as its own," cited above), even solve "the riddle of the universe" (p. 880) , if it were given enough time. The only limits he acknowledges are these "negative characteristics, such as that it [science] limits itself to truth and rejects illusions" (p. 884) and to "what is, at any given time, knowable" (p. 874).

This last limitation marks the boundary between science and rhetoric, for what is knowable in a scientific sense is only what can be verified by empirical data. Unfortunately, the burning issues in politics, economics, pedagogy, and foreign policy are not the sort that

can be conveniently resolved by empirical data, and some of them could not be resolved empirically regardless of the inconvience, because they are unmanageable by scientific techniques. These are the issues that require humanistic methods, not for resolution (since resolution is often impossible), but for judgment and decision. The proper use of methods, then, begins by identifing a subject matter and determining the method appropriate to deal with it. This, I suppose, is what Aristotle had in mind when he said words to the same effect at the beginning of the Nichomachean Ethics: "it is the mark of an educated person to look for precision in each class of things just so far as the nature of the subject admits: it is evidently equally foolish to accept probable reasoning from a mathematician and to demand from a rhetorician scientific proofs"[5] (Book 1, Chapter 3).

Physicists violate the limits of their disciplines when they pretend to speak as physicists in advising us to build or to avoid building nuclear reactors. A proper judgment in this matter must be fully informed by scientific data, but it cannot be resolved by those data. The judgment--whether to build or not to build--will necessarily be based upon uncertainties that no science can resolve.

Freud himself violates the boundaries of science in the same lecture in which he establishes them. The violation occurs in a highly charged passage in which he argues that the whole notion of God as a father, as the origin of life and of ethical precepts, is in fact a sublimation of an infantile dependence upon our biological fathers, whom as children we regarded as wise, omnipotent, and protective, and also as the arbitersof proper behavior. (pp. 875-876) The analogy is of course stunning, as all good rhetorical analogies are. But it is not conclusive in the way that syllogisms or equations are conclusive, not even conclusive in the way that a well constructed experiment is conclusive. Freud is not practicing science in this passage, but rhetoric, and whether we agree with his conclusion or not we must admit that he is a good rhetorician. If religious studies are still considered part of the humanities, we might even say that Freud has momentarily lapsed into humanism, or risen to it if you prefer, or at least stumbled on it.

This is not to suggest that Freud should have refrained from humanistic speculation entirely; had he done so, he could not have ventured even an opinion about the value of psychoanalysis, since questions of value are, when pushed far enough, based upon assumptions that cannot be empirically verified. The point is that Freud should have known to distinguish his scientific discoveries from judgments he supported with other kinds of proof. Ironically, Freud himself is now largely neglected by generations of behavioral scientists who consider much of his most important work to be deficient in the kind of research he extols in his lecture on science.

The image of the nesting boxes may be more useful than the traditional apartheid, not because it is more ecumenical in its effects, or because it more accurately reflects the physiology of the brain, or because it quells an unnecessary conflict between scientists and humanists, but simply because it better describes what scientists and humanists actually do. The best scientists either refrain from making humanistic judgments, or they realize that they are not speaking as scientists when they make these judgments. Conversely, the best humanists first discover what science can say about a given subject before making judgments about what it cannot say.

To be fair, the responsibility to recognize methodological boundaries works in more than one direction. The fact that many scientists have neglected to learn how humanists work is only half of the absurdity resulting from the traditional split between the disciplines; equally absurd is the humanists' assumption that they have no need to learn by experience what science can do before they endeavor to identify and solve problems that science is incapable of addressing. In this light it should be clear that the current debate among anthropologists, historians, linguists, and philosophers about the extent to which their research should be limited to empirical data is a false issue. When they are dealing with questions that can be resolved by empirical data, they have a responsibility to employ the scientific method. When they are dealing with questions that science cannot resolve, they have a responsibility to employ rhetorical proofs, and not to pretend that they are speaking as scientists. It would be not only irresponsible, but unnecessarily limiting for these researchers to deprive themselves of either methodology in the name of greater rigor or greater range.

But what has all this to do with Freshman English? In a larger sense it suggests a caveat about the direction in which research in this field should go. Braddock, Lloyd-Jones, and Schoer once remarked that "Today's research in compostion . . . may be compared to chemical research as it emerged from the period of alchemy." That

comparison, together with the current popularity fo Kuhn's The Structure of Scientific Revolutions,[7] may lead us to the dangerous conclusions that research in composition ought to recapitulate the evolution of scientific research, and that no new insights into the nature of writing are valid unless they are supported by Z scores and levels of significance. No one denies that what can be quantified ought to be quantified, but to limit ourselves to quantitative research, or even to develop unrealistic expectations about what quantitative research can deliver (which is the more seductive temptation), would be to deprive ourselves of the mainstream of insight in rhetorical theory from antiquity to the present day.

But closer to Monday morning and EH 101, if composition can be conceived of as instruction in the kind of thinking that writing makes possible, it is important for those of us who teach it to have a clear notion of what that kind of thinking is and how it differs from other legitimate modes of thought. Freshman English may be the only vestige of general education or some campuses, the only required course in which students can be taught to make the distinctions that Aristotle regarded as characteristic of the educated person. In this sense, Freshman English may be the last hope for the Jeffersonian ideal that college students should become educated before they learn how to earn a living.

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NOTES

[1]The Humanities in American Life: Report of the Commission on the Humanities (Berkeley: University of California Press, 1980), p. 3.

[2]The Humanities in American Life, p. 2.

[3]The Humanities in American Life, p. 6.

[4]"New Introductory Lectures on Psycho-Analysis," tr. W. J. H. Sprott, The Major Works of Sigmund Freud, Vol. 54 of the Great Books of the Western World, R. M. Hutchins and M. J. Adler, eds. (Chicago: Encyclopaedia Britannica, Inc., 1952), p. 874. Subsequent citations in the text refer to this edition.

[5]"Nichomachean Ethics," tr. W. D. Ross, The Works of Aristotle, vol. 9 of the Great Books of the Western World, R. M. Hutchins and M. V. Adler, eds. (Chicago: Encyclopaedia Britannica, Inc., 1952), pp. 339-340.

[6]Richard Braddock, Richard Lloyd-Jones, and Lowell Schoer, Research in Written Composition (Urbana: NCTE, 1963), p. 5.

[7]Thomas S. Kuhn, The Structure of Scientific Revolutions (Chicago: University of Chicago Press, 1962).